ABSTRACT FORM FOR GSA SECTION MEETINGS IN 1997

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№ 16336

VOLCANIC HAZARDS IN THE TRANS-MEXICAN VOLCANIC BELT

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A substantial percentage of the world's population (>10%) lives in areas vulnerable to the negative effects of future volcanic activity. This is especially true in Mexico, where within the Trans-Mexican Volcanic Belt (TMVB) 1/2 of the country's 90 million inhabitants live. The TMVB is a 1000 by 200 km area, dotted with hundreds of volcanoes and volcanic centers. Much of the area has been poorly studied, and the volcanic history is largely unknown.

Our approach to hazards evaluation is to combine interpretations of satellite images, field work and mapping, laboratory analysis, and age dating to elucidate the volcanic history and evaluate the potential eruptive hazards. We have assembled a digital mosaic of Landsat Thematic Mapper images to serve as a mapping base. Perspective views are created with the addition of DMA Level-1 digital topographic elevation data to assist in analysis. The interpretations guide us to key areas for field work and sampling for radiometric age determinations. Hazards evaluations are done in the form of risk maps.

We have done detailed studies in the Serdan Basin, including Pico Orizaba and La Malinche volcanoes, east of Puebla; at Popocatepetl volcano outside Mexico City; at Nevado Toluca volcano west of Mexico City, and others. Results of our studies have elucidated the eruptive history of these structures; in all cases activity has occurred much more recently than previously thought, posing new risk scenarios. Currently we are developing advanced visualization tools combined with physical flow models to better evaluate the spatial extent of eruption risks, particularly those due to flow phenomena such as pyroclastic flows and lahars.

Mexico, volcanoes, remote sensing, Landsat

KEY WORDS: Type the 5 most important key words in your abstract, separated by commas (hyphenated words okay).

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Remote Sensing of Geology from Airborne

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